Remarks

Reconsideration of this Application is respectfully requested.

Claims 14-23 and 25-37 are pending in the application, with claims 14 and 29 being the independent claims.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Based on the above Amendment and the following Remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Submitted herewith is a Request for Drawing Change Approval to address the objections to the drawings noted in the Action. It is noted that claim 24, reciting a polarizing beam splitter, a Wollaston prism and a retarding plate of Glan-Thomson prism, has been canceled. Filter 20 has been added to Fig. 2, and the position resolving diode D5 has been added to Fig. 10.

The specification has been amended as suggested by the Examiner.

Claims 14, 15 and 18-28 are rejected under 35 U.S.C. §103 as being unpatentable over Kobayashi in view of Marxer et al. ("Marxer").

Claim 14 has been amended to specify that the present invention measures macroscopic geometric parameters such as contour, size and wall thickness of an object. (see page 4 of the specification) Claim 14 recites an electronic analyzing system for determining these macro-geometric parameters from signals received from the receiving unit. (see page 5 of the specification).

In contrast to the present invention, Kobayashi describes a laser scanning microscope which enables enlarged images of small spots of micro-specimens, such as live biological specimens, to be viewed on a monitor. Such a microscope is constructed to scan only very small areas of an object, and is not able to measure macroscopic geometric parameters.

Specifically, Kobayashi describes a laser scanning optical microscope comprising a laser light source which focuses a laser beam to a small spot through a lens system. The laser beam is projected along a light path onto a specimen while also being scanned two-dimensionally. Using signal processors, enlarged images can be viewed on the monitor. Because the system is a observation system for microscopic specimens rather than a measuring system, a person of ordinary skill in the art would not modify the system as a measuring device.

Further, Kobayashi does not disclose a dark field stop disposed ahead of the photo detector in the receiver beam path in the focal plane of the optical receiver. Marxer, in Fig. 4, shows a dark field stop, but the assembly of Marxer is not able to measure the size of the object. Instead, the assembly of Marxer is only able to inspect surfaces, in particular, the inspection of small particles, defects and inhomogenities on wafers. Furthermore, the emitter unit of Marxer does not define a scanning plane in that the scanning is achieved by the movement of the object. In other words, since the object is moved along a spiral path, no scanning plane exists.

One skilled in the art would not combine the microscope device of Kobayashi with the surface inspection device of Marxer to result in the laser scanning measurement system of the present invention recited in claim 14. Accordingly, claim 14 is allowable over the cited art.

Claims 15 and 18-28 are dependent from claim 14 and are allowable as being dependent from an allowable claim.

Claims 16 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable Kobayashi in view of Marxer and Musto et al. ("Musto") Claims 16 and 17 are each ultimately dependent from claim 14. It is noted that Musto et al. fails to cure the deficiency in the rejection of claim 14, discussed above. Accordingly, claims 16 and 17 are allowable as being dependent from an allowable claim.

Claims 29, 30 and 34-37 are rejected under 35 U.S.C. §102(a) as being anticipated by Kobayashi. Like claim 14, discussed above, claim 29 recites an electronic scanning unit for measuring macroscopic geometric properties of an object. Accordingly, Kobayashi fails to anticipate claim 29. Claims 30 and 34-37 depend from claim 29 and are allowable as depending from an allowable claim.

Claims 31-33 are rejected under 35 U.S.C. §103(a) as being unpatentable Kobayashi in view of Musto. Claims 31-33 depend from claim 29. Musto fails to cure the deficiency in the rejection of claim 29, discussed above. Accordingly, claims 31-33 are allowable over Kobayashi.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance with claims 14-23 and 25-37.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

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Version With Markings To Show Changes Made

In The Specification:

Please amend the specification as follows:

Page 4, replace the paragraph beginning on line 21 with the following rewritten paragraph:

This technique of evaluation makes use of the diffraction of the limiting rays on the object edges. It is only slightly influenced by variations of the laser output and a variation of the intensity of the laser radiation in the course of the scanning operation. It can be realised with both a laser scanner with separate emitter and receiver units (cf. Fig. [3] 4) and laser scanners comprising a joint emitter/receiver unit (cf. Fig. [4] 3). In the latter case, it may be expedient to dispose an additional lens 16 ahead of the dark field stop.

Page 5, replace the paragraph beginning on line 9 with the following rewritten paragraph:

The amplitudes of these signals [is] are low in arrays in correspondence with prior art and yet they are suitable to interfere with measurement. One of the inventive arrays leads to the effect that the reflections on the inner wall provide very well detectable signals with a high signal-to-noise ratio from which the wall thickness of the tubes can be calculated. These signals are appropriate for very good analysis by determining those points of time by means of the electronic analyzing system by which the signal reaches local maximum levels. One method to this end consists in a verification of the following conditions by means of the electronic analyzing system 21:

Page 8, replace the paragraph beginning on line 30 with the following rewritten paragraph:

When, in addition to this splitting, one or several filters 20 are inserted into the receiver beam path, which are selective in terms of wavelength, it is possible to measure the following

parameters for substances (such as PET) displaying an intrinsic polarised fluorescence:

Page 10, replace the paragraph beginning on line 6 with the following rewritten paragraph:

The receiver module is provided with means for mounting detector modules thereon (cf. the schematic illustration in Fig. 10b), lenses or mirrors (items A to H in Fig. 10a) and beam splitters (cf. items St1 to St3 in Fig. 10a). Alternatively, a position-resolving photo diode D5[, a filter D6, a Wollaston prism D7 and a retarding plate of a Glan-Thomson prism D8] can be used in the present invention. Depending on the equipment of the receiver module and the selected arrangement various measured parameters can be derived. Some examples thereof are listed in Table 1:

In the Claims:

Please cancel claim 24 and amend the claims as follows:

14. (Twice Amended) A laser scanner measuring system for measuring macroscopic geometric parameters of an object, the macroscopic geometric parameters including at least one of contour, size and wall thickness of the object, the system comprising:

an emitter unit having a laser, a beam deflector unit and an optical emitter system which define a scanning beam path and a scanning plane;

a receiver unit including a photo detector disposed in the focal plane of an optical receiver system for a receiver beam path, wherein the surface normal of said optical receiver system is parallel with the scanning beam path, the receiving unit receiving the beam after scanning the object and generating a signal;

a dark field stop disposed ahead of said photo detector in the receiver beam path in the focal plane of said optical receiver system; [and]

a beam splitter ahead of said dark field stop for splitting a partial beam from the receiver beam path, said photo detector including a photo diode arranged in said partial beam, said photo diode being disposed approximately in the focal point of said optical receiver system; and

an electronic analyzing system for determining the macroscopic geometric parameters from the signal.

27. (Twice Amended) A laser scanner measuring system according to Claim 14, wherein said emitter unit and said receiver unit [from] form a single combination unit and wherein a reference beam path is realised in the combination unit, in the outside space or by means of a

light guide, which is superimposed by the beam path coming from the object to be measured in such a way that the resulting interference pattern which varies locally and in the course of time is detected by means of at least one detector element.

29. (Twice Amended) A laser scanner measuring system for measuring macroscopic parameters of an object, the macroscopic geometric parameters including at least one of contour, size and wall thickness of the object, the system comprising

an emitter unit having a laser, a beam deflector unit and an optical emitter system, which define a scanning beam path as well as a scanning plane; [and]

a receiver unit including a photo detector disposed in the focal plane of an optical receiver system for a receiver beam path, the surface normal of said optical receiver system being parallel with the scanning beam path, and said photo detector being a photo diode array or a position-resolving photo diode, the receiving unit receiving the beam after scanning the object and generating a signal; and

an electronic analyzing system for determining the macroscopic geometric parameters from the signal.